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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,929	02/27/2004	Eric S. Cole	079361-9034-01	6802

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EXAMINER

EDGAR, RICHARD A

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 08/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/789,929

Applicant(s)

COLE ET AL.

Examiner

Richard Edgar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2004 under 37 CFR 1.53(b).
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-30 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the wall integrally formed with the inlet wall extending axially into the fan (claims 3 and 25) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings are objected to because: the reference characters must measure at least 0.32 cm (1/8 inch) in height (37 C.F.R. §1.84 (p)(3)); and the view numbers must be larger than the numbers used for reference characters (37 C.F.R. §1.84 (u)(2)).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

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Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

Applicants' use of the English units of inches has been noted in the specification. In accordance with MPEP §608.01 IV, all patent applicants should use the metric (S.I.) units followed by the equivalent English units when describing their inventions in the specifications of patent applications

Claim Objections

Claims 14 and 15 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 1, lines 10-11, previously requires a wall extending generally axially adjacent the inlet aperture.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,468,034 (Garrison et al. hereinafter) in view of United States Patent No. 4,799,287 (Belanger et al. hereinafter).

Garrison et al. teach a fan housing for a fan rotatable about an axis, the fan housing comprising: a first housing component 40 at least partially defining an internal chamber 32 adapted to receive the fan 14; and an inlet wall 44 having an inlet aperture 16 through which fluid enters the fan housing; the first housing component 40 comprising a transition section 55 extending away from the inlet aperture 16 toward an exhaust outlet 18 and through which fluid passes from the internal chamber 32 to the exhaust outlet 18; an axially-extending side wall 52 located adjacent the exhaust outlet 18; a second housing component 42 complementary to the first housing component 40 and at least partially defining the internal chamber 32, the second housing component 42 comprising a transition section 54 extending toward the exhaust outlet 18 and through which fluid passes from the internal chamber 32 to the exhaust outlet; and a side wall 64 extending axially toward the first housing component 40 and shaped complementary to the axially-extending side wall 52 of the first housing component 40; and a housing seam 60 defined between the side wall 52 of the first housing component 40 and the side wall 64 of the second housing component 42, the seam having a length extending at least partially about the axis while extending axially (see annotation A).

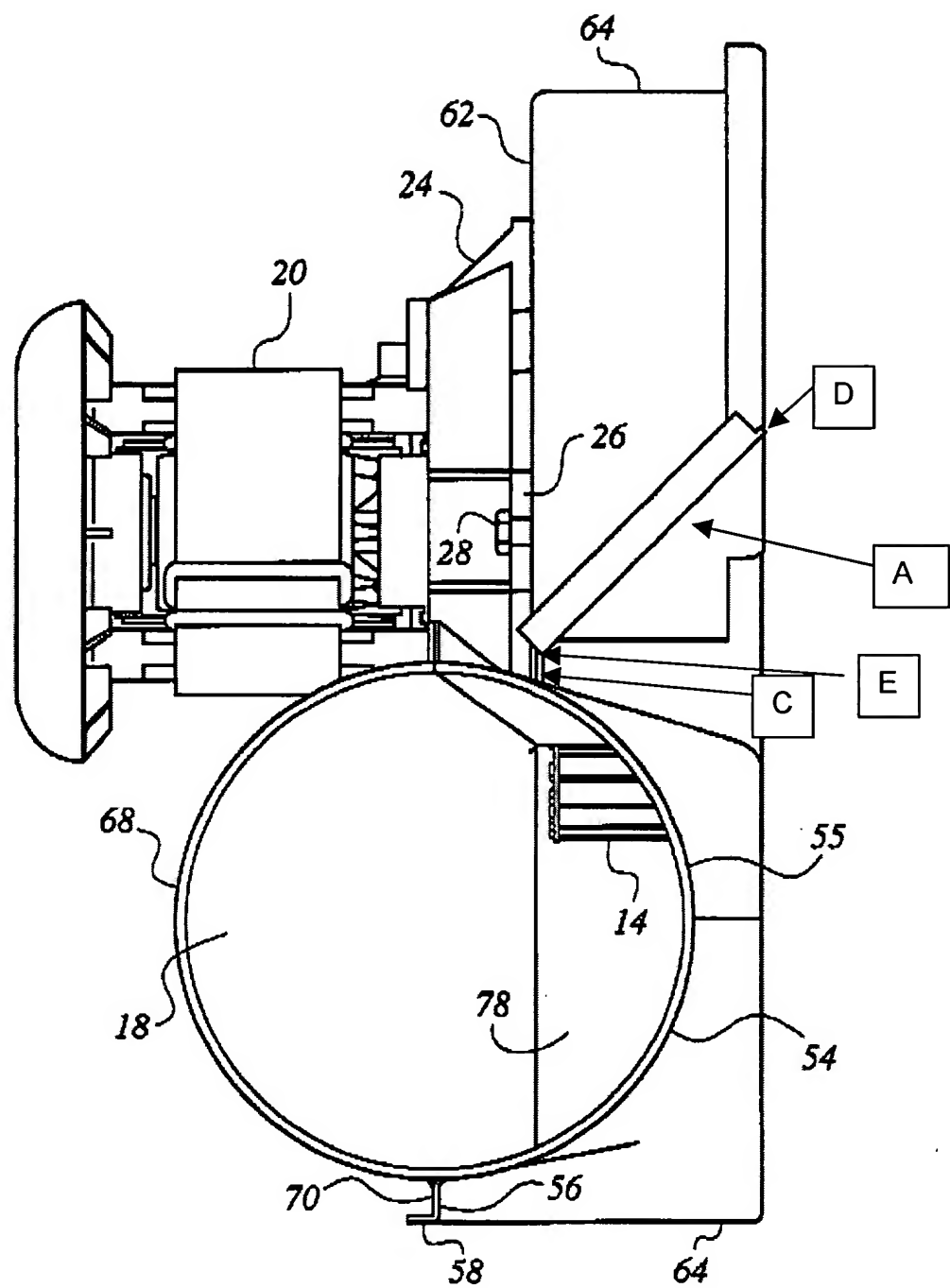
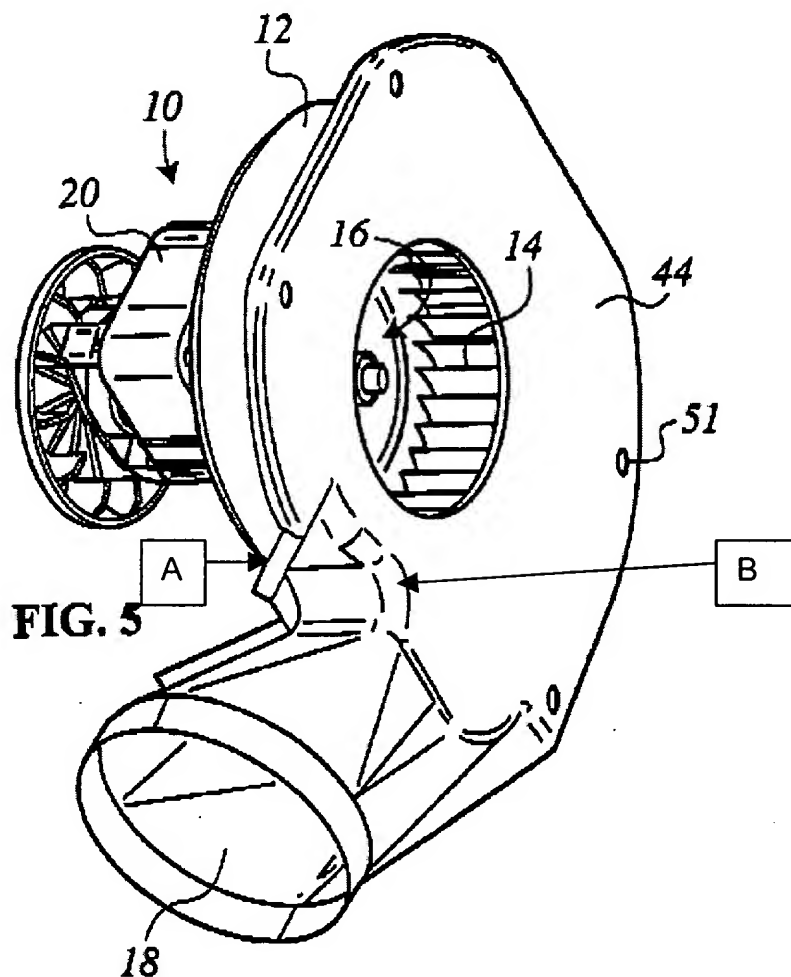


FIG. 1

The fan housing further comprises a cutoff (see annotation B) located adjacent the exhaust outlet 18 and defining high and low pressure areas at different circumferential positions about the axis; wherein the seam 60 runs about the axis from one side of the exhaust outlet to another side of the exhaust outlet, and the cutoff (B) is located between the exhaust outlet 18 and the length of the seam extending at least partially about the axis while extending axially (A).



The seam 60 extends from an axial location substantially co-planar with the inlet wall 44 (see Fig. 7) to an axial location disposed from the inlet wall (see Fig. 4).

The second housing component 42 further comprises a wall 22, 62 spaced a distance from the inlet wall 44 to at least partially define the internal chamber 32; and the seam 60 extends from an axial location (see annotation C) substantially co-planar with the wall 22, 62 of the second housing component 42 to an axial location disposed from the wall of the second housing component (see Fig. 4).

The side wall 64 is substantially volute (see Fig. 3), and extends between a location adjacent one side of the exhaust outlet 18 to a location adjacent another side of the outlet; and the length of the seam extending at least partially about the axis while extending axially (A) is located adjacent the exhaust outlet 18.

The length of the seam A extends about less than a majority of the circumference of the side walls (see Fig. 1); and another length of the seam extends about another portion of the circumference of the side walls (see Fig. 6).

The length of the seam extending at least partially about the axis while extending axially A runs in a direction away from the inlet wall 44 with increasing proximity to the exhaust outlet 18 (see Fig. 4).

Each of the first and second housing components 40, 42 has a flange 56, 70, the flanges of the first and second housing components defining the housing seam therebetween.

The side wall 64 of the second housing component 42 extends about the axis and ends a distance short of the cutoff B.

Fluid flow through the fan housing includes a flow path extending from a location upstream of the transition sections 54, 55 to the exhaust outlet 18; a first plane in which the axis lies extends through portions of the first and second housing components at a location upstream of the first and second transition sections to define a substantially rectangular cross-sectional shape; and a second plane substantially perpendicular to flow toward the exhaust outlet extends through the first and second transition sections to define a substantially round cross-sectional shape (see col. 2, line 66 through column 3, line 2).

The exhaust outlet 18 of at least a part of the first and second transition sections 54, 55 are axially displaced with respect to the rest of the fan housing (see Fig. 4).

A method of manufacturing a two-piece fan housing for receiving a fan 14 rotatable about an axis, the method comprising: forming a first wall 44 from a first substantially flat sheet of material; forming an inlet aperture 16 in the first wall 44; forming a first transition section 54 from the first substantially flat sheet of material, the first transition section extending to and partially defining an exhaust outlet 18 of the fan housing; forming a first portion of a volute housing side wall 52 from the first substantially flat sheet of material; forming a second wall 62/22 from a second substantially flat sheet of material; forming a second transition section 54 from the second substantially flat sheet of material, the second transition section extending to and partially defining the exhaust outlet 18; forming a second portion of a volute housing side wall 64 from the second substantially flat sheet of material, the second portion of the volute side wall having a shape complementary to the first portion of the volute

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housing side wall 52; and coupling the first and second portions of the volute housing side wall 52, 64 together along a seam 56/70 that extends axially while also extending circumferentially (A).

The first and second flat sheets of material are sheet metal (col. 6, lines 23-25). The side wall has an axial length; at least a majority of the axial length of the side wall 52 adjacent the exhaust outlet 18 is defined by the first portion of the volute side wall 52; and at least a majority of the axial length of the side wall 64 in other locations around the axis defined by the second portion of the volute side wall 64.

Garrison et al. only teach an inlet aperture 16 and do not teach a wall integrally formed with the inlet wall, running around the inlet aperture, and extending generally axially and radially into the internal chamber 32.

Belanger et al. disclose a blower housing 13 having an axial inlet aperture formed with an inlet restriction device 24 comprising a conical portion extending axially and radially into the fan 25 for the purpose of controlling the air entering the fan housing.

Since Garrison et al. show a fan housing having an axial inlet and tangential outlet, and Belanger et al. teach a wall extending axially and radially into the fan of a centrifugal blower having an axial inlet and tangential outlet, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify

the inlet aperture 16 of Garrison et al. to have a conical portion as taught by Belanger et al. for the purpose of controlling the air entering the fan housing.

Claims 16-19, 22, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,468,034 (Garrison et al. hereinafter) in view of United States Patent Application Publication No. 2002/0025252 A1 (Gatley, JR. hereinafter).

Garrison et al. teach a two-piece fan housing for receiving a fan 14 rotatable about an axis, the two-piece fan housing comprising: a first housing piece 40 comprising: a first wall 44; an inlet aperture 16 defined in the first wall 44 through which fluid enters the fan housing; and a transition section 55 extending to and partially defining an exhaust outlet 18 of the fan housing through which fluid exits the fan housing; a second housing piece 42 shaped complementary to the first housing piece 44 and comprising: a second wall 22/62 spaced from the first wall 44; and a transition section 54 extending to and partially defining the exhaust outlet 18; a side wall 64 extending about the axis between the first and second walls 44, 22/62 of the first and second housing pieces 44, 42, the side wall 64 comprising an axial length between the first and second walls 44, 22/62, at least a majority of the axial length of the side wall 52 adjacent to the exhaust outlet 18 defined by the first housing piece 40 (see Fig. 1), and at least a majority of the axial length of the side wall 64 in other locations around the axis defined by the second housing piece 42; and a seam 60 defined between adjacent

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portions of the first and second housing pieces 40, 42, the seam running about the axis, comprising a first portion A running partially about the axis while also running in an axial direction, and further comprising a second portion 66/48 lying within a plane substantially perpendicular to the axis, wherein the first A and second 66/48 portions of the seam are joined by a third portion D of the seam integral with the first and second portions.

The axial length of the side wall is substantially constant in a majority of locations about the axis (see Fig. 6).

The plane is a first plane, and wherein the seam further comprises a fourth portion C lying within a plane substantially perpendicular to the axis and spaced an axial distance from the first plane.

The first A and fourth portions C of the seam are joined by a fifth portion E of the seam integral with the first A and fourth C portions.

The two-piece fan housing further comprises flanges 48/66; 56/70 extending radially away from the seam at the first A, second 66/48, and third portions D of the seam.

The two-piece fan housing further comprises a cutoff B located adjacent the exhaust outlet 18 and defining high and low pressure areas at different circumferential positions about the axis; wherein the seam 60 runs about the axis from one side of the exhaust outlet to another side of the exhaust outlet; and the cutoff is located between the exhaust outlet and the first portion of the seam (see Figs. 5 and 6).

The side wall 52/64 is substantially volute (see Fig. 3), and extends between a location adjacent one side of the exhaust outlet to a location adjacent another side of the outlet; and the length of the first portion of the seam A is located adjacent the exhaust outlet (see Fig. 1).

Garrison et al. do not state or disclose that the second, third and fifth portions of the seam are curved.

Gatley, JR. show a stamped blower housing wherein the flange portions 30 of the seam are curved for the purpose of minimizing stress concentrations during a manufacturing operation.

Since the Garrison et al. blower housing is manufactured by an operation such as stamping, and Gatley, JR. teach to curve the flanges at the seam while stamping the blower housing, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to manufacture the seam with curved flanges as taught by Gatley, JR. for the purpose of minimizing stress concentrations during a manufacturing operation.

Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,468,034 (Garrison et al. hereinafter) in view of United States Patent Application Publication No. 2002/0025252 A1 (Gatley, JR. hereinafter) as applied to claim 16 above, and further in view of a design choice.

Garrison et al. as modified by Gatley, JR. teaches a blower housing having a seam extending around the fan housing. A first portion of the seam (A) extends circumferentially as well as axially. However, the Garrison et al. reference does not state that the first portion of the seam extends at least one-eighth (including one-third) the way around the housing. The slope of the first portion of the seam defines the circumferential distance around the fan housing the seam extends.

The circumferential distance of at least one-eighth has not been disclosed as being advantageous, solving a stated problem or used for any particular purpose. Moreover, it appears that the slope of the first portion of the seam would perform equally well at any value suitable for a stamping operation.

Accordingly, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to have modified Garrison et al. further, such that the slope of the seam results in a circumferential distance of at least one-eighth of the fan housing perimeter because such a modification would have been considered a mere design consideration which fails to patentably distinguish over Garrison et al. in view of Gatley, JR.

Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,468,034 (Garrison et al. hereinafter) in view of United States Patent Application Publication No. 2002/0025252 A1 (Gatley, JR. hereinafter) as applied to claim 16 above, and further in view of United States Patent No. 4,799,287 (Belanger et al. hereinafter).

Garrison et al. in view of Gatley, JR. teach a blower housing having an inlet wall with an inlet aperture, as explained above, but fail to disclose a wall integrally formed with the inlet wall, running around the inlet aperture, and extending generally axially and radially into the internal chamber 32.

Belanger et al. disclose a blower housing 13 having an axial inlet aperture formed with an inlet restriction device 24 comprising a conical portion extending axially and radially into the fan 25 for the purpose of controlling the air entering the fan housing.

Since Garrison et al. show a fan housing having an axial inlet and tangential outlet, and Belanger et al. teach a wall extending axially and radially into the fan of a centrifugal blower having an axial inlet and tangential outlet, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the inlet aperture 16 of Garrison et al. to have a conical portion as taught by Belanger et al. for the purpose of controlling the air entering the fan housing.

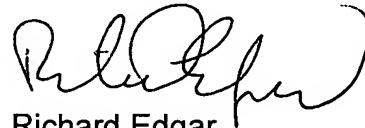
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Edgar whose telephone number is (571) 272-4816. The examiner can normally be reached on Mon.-Thur. and alternate Fri., 7 am- 5 pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Richard Edgar', is positioned above the printed name.

Richard Edgar
Examiner
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RE